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PATENT, TRADEMARK, COPYRIGHT  
AND UNFAIR COMPETITION LAW  
AND RELATED LITIGATION

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EDWARD B. EVANS 1936-1971

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January 17, 2006

## FACSIMILE COVER SHEET

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Art Unit 2145  
Mail Stop AMENDMENT  
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Enclosures:

Fax Cover Sheet containing Certificate of  
Facsimile Transmission (1 page)  
Response containing Certificate of Facsimile  
Transmission (8 pages)

From: Scott A. Stinebruner  
Reg. No. 38,323

Re: U.S. Patent Application  
Serial No. 09/845,933  
Filed: April 30, 2001  
Applicant: Bruce Leroy Beukema et al.  
Art Unit: 2145  
Confirmation No.: 3353  
Atty Docket: ROC920010099US1  
Our Ref: IBM/187

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MESSAGE/COMMENTS  
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*Judith L. Volk*  
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*January 17, 2006*  
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Judith L. Volk January 17, 2006  
Judith L. Volk Date

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Bruce Leroy Beukema et al. Art Unit: 2145  
Serial No.: 09/845,933 Examiner: Jeffrey R. Swearingen  
Filed: April 30, 2001 Atty. Docket No.: ROC920010009US1  
For: PRIMITIVE COMMUNICATION MECHANISM FOR ADJACENT  
NODES IN A CLUSTERED COMPUTER SYSTEM

**RESPONSE**

Mail Stop AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This paper is submitted in reply to the Office Action dated October 17, 2005, within the three-month period for response. Reconsideration and allowance of all pending claims are respectfully requested.

In the subject Office Action, claims 1-2, 6-10, 15-20 and 22 were rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,151,688 to Wipfel et al., and claims 3-5, 11-14 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wipfel et al. in view of U.S. Patent No. 6,430,593 to Lindsey. Applicants respectfully traverse the Examiner's rejections to the extent that they are maintained.

Turning first to the rejection of independent claim 1, this claim generally recites a method of communicating between nodes in a clustered computer system. The method includes communicating a port identifier from a first node to a second node coupled to

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Amendment and Response dated January 17, 2006  
Reply to Office Action of October 17, 2005  
IBM Docket ROC920010009US1  
WH&E IBM/187  
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the first node over a point-to-point network, where the first node includes a plurality of network ports and a plurality of communication registers, where each communication register is dedicated to an associated network port among the plurality of network ports and is configured to store data received over such associated network port, and where the port identifier identifies a network port among the plurality of network ports to which the second node is coupled to the first node. The method also includes communicating data from the second node to the first node by initiating a write operation on the first node using the second node to store the data in the communication register associated with the network port identified by the port identifier.

In rejecting claim 1, the Examiner relies on Wipfel. Wipfel, however, merely discloses a clustered computer system that attempts to diagnose problems in a cluster by performing remote memory probes, where one node probes another node by reading from a memory disposed on the other node. The reference, however, fails to disclose a number of recited features in claim 1.

For example, Wipfel fails to disclose "communicating a port identifier from a first node to a second node coupled to the first node over a point-to-point network," or "wherein the port identifier identifies a network port among the plurality of network ports to which the second node is coupled to the first node," as required by claim 1. The Examiner cites col. 4, lines 15-25 of Wipfel for allegedly disclosing these recited features. The cited passage, however, merely discloses performing a probe of a remote node by retrieving from the remote node a value identifying a problem or an indication that a remote memory is inaccessible. There is nothing in the passage that explicitly or implicitly discloses the communication of a value from the remote node, where that value operates as a port identifier that identifies the specific network port to which the remote node is coupled to the node that is performing the probe, as would be required to anticipate these features of claim 1. Of note, none the various permutations of values enumerated at col. 4, lines 15-25, or elsewhere in the reference, are related to identifying a network port or any other location or address-type information.

In addition, Wipfel fails to disclose "wherein the first node includes a plurality of network ports and a plurality of communication registers," and "wherein each communication register is dedicated to an associated network port among the plurality of network ports and is configured to store data received over such associated network port," as also required by claim 1. The Examiner cites col. 6, lines 15-24 and col. 8, lines 16-30 for allegedly teaching these features. The first passage, however, is completely silent with respect to communication registers, much less communication registers that are dedicated to specific network ports and/or configured to store data retrieved over an associated network. The second passage generally discloses memory buffers, which are arguably analogous to communication registers; however, it is important to note that these memory buffers are described as shared memory buffers. In fact, the passage explicitly contrasts memory buffers and other shared resources with processors and interconnects, which are described as being dedicated to particular nodes. Given that the memory buffers are shared between nodes, Applicants submit that these memory buffers could not be interpreted to be analogous to communication registers that are dedicated to specific nodes, much less to specific network ports on those nodes. In short, Wipfel falls far short of disclosing a communication register or other data storage device that is dedicated to a specific network port on a specific node in a cluster.

Wipfel also fails to disclose "wherein each network port is configured to directly couple to an adjacent node in the clustered computer system over a point-to-point interconnect in the point-to-point network," as required by claim 1. The Examiner cites col. 7, lines 10-18 of Wipfel for allegedly teaching this feature; however, it is important to note that this passage, as well as Figs. 1 and 2 which relate to the cited passage, describe an interconnection network incorporating a system area network switch between the nodes in the cluster. The cited passage therefore fails to disclose nodes that are directly coupled to one another through point-to-point interconnects.

Finally, Wipfel fails to disclose "communicating data from the second node to the first node by initiating a write operation on the first node using the second node to store the data in the communication register associated with the network port identified by the

port identifier," as also required by claim 1. The Examiner cites col. 10, lines 13-17 and col. 11, lines 61-63. The first passage, however, discloses only a probing node monitoring another node or other device, which as noted above, refers to reading a value from a remote node (see col. 4, lines 15-25 of Wipfel). Likewise, the second passage refers to reading a remote memory. The cited passages therefore do not even disclose a write operation, much less a write operation that is specifically directed to a communication register associated with the network port to which the node initiating the write operation is connected to the node being written to.

Wipfel therefore fails to disclose a number of features recited in claim 1. As such, claim 1 is novel over Wipfel, and the rejection should be withdrawn.

Claim 1 is also non-obvious over Wipfel and the other prior art of record as there is no suggestion in the reference, or elsewhere in the prior art, of the combination of features recited in claim 1. For example, the Examiner has failed to provide any objective evidence of a motivation in the art to modify Wipfel to implement communication registers that are specifically associated with network ports in a node that are coupled to other nodes via point-to-point interconnections, to communicate a port identifier to identify the network port to which one node is coupled to another node, or to communicate data via a write operation directed to a communication register associated with a given port identifier.

Applicants therefore respectfully submit that claim 1 is also non-obvious over Wipfel and the other prior art of record. Reconsideration and allowance of independent claim 1, as well as of claims 2-9 which depend therefrom, are therefore respectfully requested.

Next, with respect to the rejection of independent claim 10, this claim generally recites a circuit arrangement which includes a plurality of network ports, each configured to couple a first node from a clustered computer system to another node in the clustered computer system over a point-to-point network; a plurality of communication registers, each dedicated to an associated network port among the plurality of network ports and configured to store data received through such associated network port; and a control

circuit coupled to the plurality of communication registers and configured to automatically notify the first node in response to storage of data in any of the plurality of communication registers.

In rejecting claim 10, the Examiner again relies on Wipfel. As noted above, however, Wipfel merely discloses a clustered computer system that attempts to diagnose problems in a cluster by performing remote memory probes, where one node probes another node by reading from a memory disposed on the other node. The reference does not disclose a number of recited features in claim 10, and as a result, the rejection of claim 10 should be withdrawn.

For example, Wipfel fails to disclose "a plurality of network ports, each configured to couple a first node from a clustered computer system to another node in the clustered computer system over a point-to-point network." The Examiner relies on col. 7, lines 10-18 and 30-37, as well as the fact that "[e]ach of the nodes in Wipfel must have a port connect [sic] to it." (Office Action, ¶13). With respect to the passages in col. 7, as noted above in connection with claim 1, Wipfel does not disclose a point-to-point network, given the use of a system area network switch between nodes. Furthermore, the backup link discussed at lines 19-29, while arguably being a direct connection, is not described as being coupled to one of a plurality of network ports, as required by claim 10. Indeed, claim 10 recites a plurality of network ports, each configured to coupled the same node (a first node) to another node in the clustered computer system. The Examiner's statement regarding the fact that each node must have a network port speaks nothing of the fact that claim 10 requires multiple network ports to be used to coupled the same node to multiple other nodes in a clustered computer system.

Wipfel also fails to disclose "a plurality of communication registers, each dedicated to an associated network port among the plurality of network ports and configured to store data received through such associated network port," as also required by claim 10. As with claim 1, the Examiner relies on col. 8, lines 16-30 for allegedly disclosing this feature. As discussed above, however, the cited passage generally discloses memory buffers, which are explicitly described as shared memory buffers. In

fact, the passage explicitly contrasts memory buffers and other shared resources with processors and interconnects, which are described as being dedicated to particular nodes. Given that the memory buffers are shared between nodes, Applicants submit that these memory buffers could not be interpreted to be analogous to communication registers that are dedicated to specific nodes, much less to specific network ports on those nodes. As such, Wipfel does not disclose a communication register or other data storage device that is dedicated to a specific communication register on a specific node in a cluster.

Wipfel likewise does not disclose "a control circuit coupled to the plurality of communication registers and configured to automatically notify the first node in response to storage of data in any of the plurality of communication registers," as also required by claim 10. The Examiner relies on col. 10, lines 13-27 for allegedly teaching this feature. This passage, however, merely discloses a periodic probe of one node by another node as a form of watchdog. The passage is therefore deficient on several grounds.

First, claim 10 requires that the control circuit notify the first node of data storage in communication registers that are associated with the network ports that couple the first node to other nodes in the clustered computer system. Thus, the notification to the first node refers to the storage of data that has been communicated to the first node from another node. The cited passage, in contrast, refers to probes of one node by another node, and is completely silent with respect to the notification of one node of data being received from another node.

Second, claim 10 requires that the control circuit notify the first node in response to the storage of data in "any of the plurality of communication registers." As noted above, Wipfel does not even disclose multiple communication registers in a node. Consequently, Wipfel cannot be read to disclose a control circuit that monitors multiple communication registers and notifies a node in response to the storage of data in any of those registers.

Wipfel therefore fails to disclose a number of features recited in claim 10. As such, claim 10 is novel over Wipfel, and the rejection should be withdrawn.

Claim 10 is also non-obvious over Wipfel and the other prior art of record as there is no suggestion in the reference, or elsewhere in the prior art, of the combination of features recited in claim 10. For example, the Examiner has failed to provide any objective evidence of a motivation in the art to modify Wipfel to implement communication registers that are specifically associated with network ports in a node that are coupled to other nodes via point-to-point interconnections, to implement communication registers that are dedicated to associated network ports and configured to store data received through such associated network ports, or to automatically notify a node in response to storage of data in any of a plurality of communication registers for that node.

Applicants therefore respectfully submit that claim 10 is also non-obvious over Wipfel and the other prior art of record. Reconsideration and allowance of independent claim 10, as well as of claims 11-19 which depend therefrom, are therefore respectfully requested.

Next, with respect to independent claims 20 and 22, each of these claims, similar to claim 10, recites the concepts of automatically notifying a node in response to the storage of data in any of a plurality of communication registers, where each communication register is dedicated to an associated network port, and where each network port is used to couple a node to another node over a point-to-point network. As discussed above in connection with claim 10, none of these features are disclosed or suggested by Wipfel. Applicants therefore respectfully submit that independent claims 20 and 22 are novel and non-obvious over the prior art of record for the same reasons as presented above for claim 10. Reconsideration and allowance of independent claims 20 and 22, as well as of claim 21 which depends therefrom, are therefore respectfully requested.

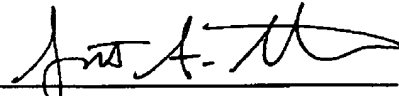
Finally, with respect to the dependent claims, Applicants traverse the Examiner's rejections based upon the dependency of these claims on the aforementioned independent claims. It should be noted, however, that a number of these claims recite additional



features that are not disclosed or suggested by the prior art of record. These features will not be addressed separately herein in the interest of prosecutorial economy.

In summary, Applicants respectfully submit that all pending claims are novel and non-obvious over the prior art of record. Reconsideration and allowance of all pending claims are therefore respectfully requested. If the Examiner has any questions regarding the foregoing, or which might otherwise further this case onto allowance, the Examiner may contact the undersigned at (513) 241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,



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